

RETHINKING WINTER GRAZING IN THE ALLEGHANY HIGHLANDS

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ABSTRACT

In 1973, the first commercially available round baler, to harvest forage, could be purchased for around \$4,000. At that time, the gross income from 8 slaughter steers could purchase this brand new state-of-the-art machine. In 2021, a brand new state-of-the-art baler can be purchased for around \$48,000 which is equivalent to the market value of around 28 slaughter steers. Economic indicators imply this trend will continue. Highland County’s elevation and cool temperatures allow native bluegrass and clover pastures to flourish. This resource fosters high performance in grazing livestock and is sought after by neighboring producers, via land rental or purchase. Drought and periods of extreme high temperatures are a constant risk that could compromise these native species that thrive in cooler temperatures. High temperatures and drought reduce pasture yield and livestock producers turn to importing hay from outside of the region to make-up the short-fall of locally available forage. This risks introducing undesirable species to bluegrass sod that is weakened during these periods of environmental stress. To avoid the high costs of making hay and the threat that purchased hay could have on these pastures, this projects begins a process of evaluating alternative forage management strategies for pastoral systems in the Appalachian Highlands.



Highland County’s elevation and cool temperatures allow native bluegrass and clover pastures to flourish. This resource fosters high performance in grazing livestock during the growing season.

Situation Analysis: Livestock production systems in the Appalachian Highlands where bluegrass (*Poa pratensis*) predominates have traditionally relied on hay as a primary source of feed from November to April. Increasing cost of equipment have made hay production so expensive as to threaten the economic viability of these systems. Protecting pasture from grazing in the late summer and fall for the purpose of winter grazing is called ‘stockpiling’ and is much less expensive than harvesting hay. Stockpiling has been done very successfully in similar livestock systems at lower elevations where fescue (*Festuca arundinacea*) predominates.

Could stockpiling bluegrass pastures for winter grazing be an option in the Appalachian Highlands?

What volume and quality of pasture could be grown in the fall and grazed in the win-

How rapidly will forage quality decline through the winter due to exposure to the elements?

Study Methods: Eighteen forage cages were erected in September, 2021 on an un-grazed and un-hayed field on a farm in Highland County. Nine of these cages were fertilized with 80lbs of Nitrogen in September and nine cages are unfertilized. Six of the cages, three fertilized and three unfertilized, will be harvested mid-December, mid-January, and mid-February to measure the yield and quality at each harvest. Harvesting the forage in the cages will emulate what grazing would be like in these months and the data should provide a sense of the practical value of stockpiling in the Appalachian Highlands. Our data will include our baseline yield and quality in September; the same measures in December, January, and February; and other observations pertinent to the study.

Yield and Quality of Standing Fresh Forage Harvested September, December, January, and February ¹ Predominantly Bluegrass (<i>Poa pratensis</i>) Pasture Located at Greenstream Farm, Bluegrass, Virginia North Facing Slope, Elevation 2,750 feet					
Standing Forage Harvest Date:	Average Pounds Per Acre (100% Dry Matter) ²	Average Per Pounds Acre, Fertilized, (100% Dry Matter) ²	Average Tons Per Acre, Unfertilized, (100% Dry Matter) ²	TDN (% of Dry Matter) ³	Crude Protein (% of Dry Matter) ⁴
September 9, 2021	1076	N/A	N/A	58	19
December 13, 2021	472	580	365	59	14
January 13, 2022	475	507	443	54	12
February: TBD	—	—	—	—	—

1– Yield and Quality measurements of standing forage tell us if the standing forage is sufficient to sustain livestock. 2– Yield and quality measures are normally expressed on a ‘Dry Matter’ basis. Since the moisture content of different animal feeds varies, comparing different feeds on a ‘dry’ or ‘water-free’ basis ensures a fair comparison. 3– TDN=Total Digestible Nutrients is a measure of feed energy and can also be expressed as calories. Feed energy is used for metabolic function. TDN is expressed as a percentage of the total amount of feed. Most livestock can be sustained on a feed that is 60% TDN if it is offered *ad libitum* (unlimited, free-choice consumption). 4—Crude Protein is a measure of the concentration of protein in the feed. Protein is necessary for growth and repair of animal tissues. Feeds that are composed of 14% crude protein or higher are generally sufficient to support most classes of livestock if the feed is offered *ad libitum*.



Above: Forage Test Site on Greenstream Farm, Bluegrass, VA

Below: One of the forage cages in November



Results and Next Steps: The information gathered in this field study indicates the quality of stockpiled bluegrass (*Poa pratensis*) is sufficient to support most classes of grazing livestock through the winter with perhaps some nutritional supplement for lactating females or young growing stock which have higher energy demand. Quantity of forage available declined significantly across the months of the study with total volumes 56% less in December than that measured in September. The magnitude of this decline may be due, in part, to experimental error because baseline forage plot areas were measured by a slightly different method in September and fewer plots contributed to the average yield reported for September. However, the low forage volume available in December and January poses a significant challenge to pasture stockpiling in this environment as a viable strategy to reduce dependence on hay. Strategies to reduce winter feeding cost and extending the grazing season may entail planting improved forages better suited to stockpiling. Planting such forage species would be limited to fields that planting equipment can access which is a challenge in the Appalachian Highlands.